AUTEC Minefield & Shallow Water Range (Berry Island Range) in Support of OT&E

4 March, 2004

NDIA T&E Conference

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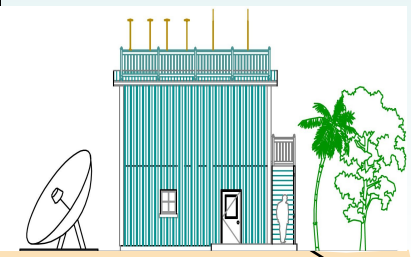
AUTEC Minefield & Shallow Water Range

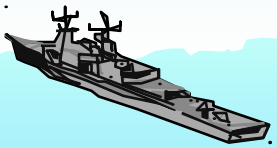
Satellite

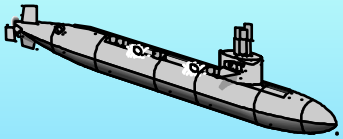
Data To
AUTEC Site 1

AUTEC Real-time
Display Tracking Center

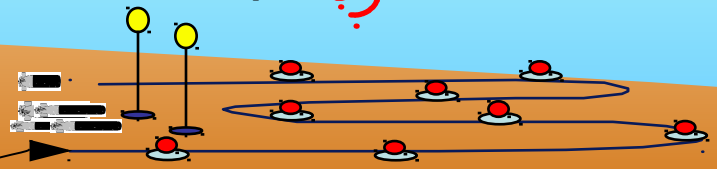
AMSWR Cable
Termination Site
Berry Island







Tethered Shapes



Bottom Shapes

Hydrophones Array

J-Box

AMSWR

- Purpose & Exercise Support
  - Support the COMSULANT Immediate Need to Conduct Mine Detection & Avoidance & Littoral ASW Operations At the Berry Islands
  - Support All Platform Organic Mine Counter Measures (MCM)
  - Support T&E Events and Tactics Experimentation and Development
  - Provide Effective and Efficient All-platform Mine Detection & Avoidance Training
    - Realistic Environment
    - Realistic Targets
    - Real-time Exercise Data Collection, Display and Analysis
    - Affordable Operation and Maintenance
  - Support Future Organic MCM Systems Test and Evaluation

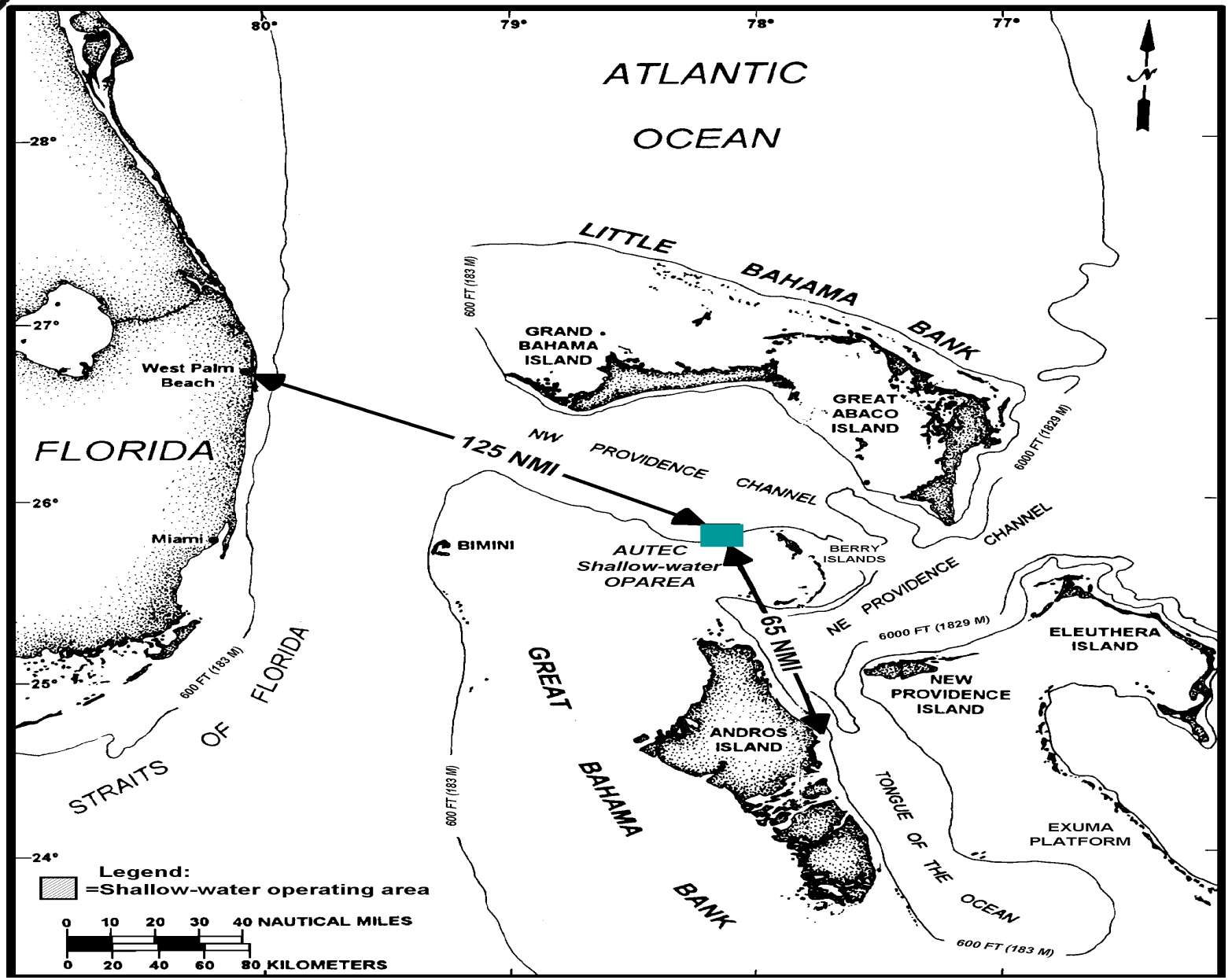
AMSWR

- Current Needed Capabilities
  - Environmentally Realistic Area Including Water Depth, Bottom Composition, and Acoustics
  - Realistic Targets (Mine Shapes) Representing Commonly Expected Mine Threats
  - Exercise Reconstruction, Analysis, and Feedback
    - Underwater Tracking
    - Above Surface Tracking and Communications
- Operational Considerations
  - Affordable Operational Cost
  - Post IOC M+O Costs TBD
  - Low Operational Risk
    - Shore Based Much Less Weather Constrained Than Shipboard Operations
    - Trunk Cable And Exposed Systems Protected From Fishing
    - Remote Diagnostics Provide State of the System Status
  - Provide Capability for Exercise Conduct, Safety, and Debrief

AMSWR

- OPTEMPO
  - Submarines – From Day of IOC
    - 23-25 SSNs every 12-15 mos. @ 8-10 hrs. each
    - Occasional TACDEVEXs (estimate 2/year @ 5 days/24 hrs each)
      - Assumes PCO Exercises 2/year
  - BG deployers (2 SSNs/BG, 2 1/2 BGs/year, 8-10 hrs/SSN)
  - OT&E Events
    - A-RCI HF Phase IV sonar APB
    - Advanced Mine Simulation System (AMISS)
    - Foreign Mine Surrogate Targets (FORTS)

Little Stirrup Cay Location



Aerial View Of Little Stirrup Cay

GSC

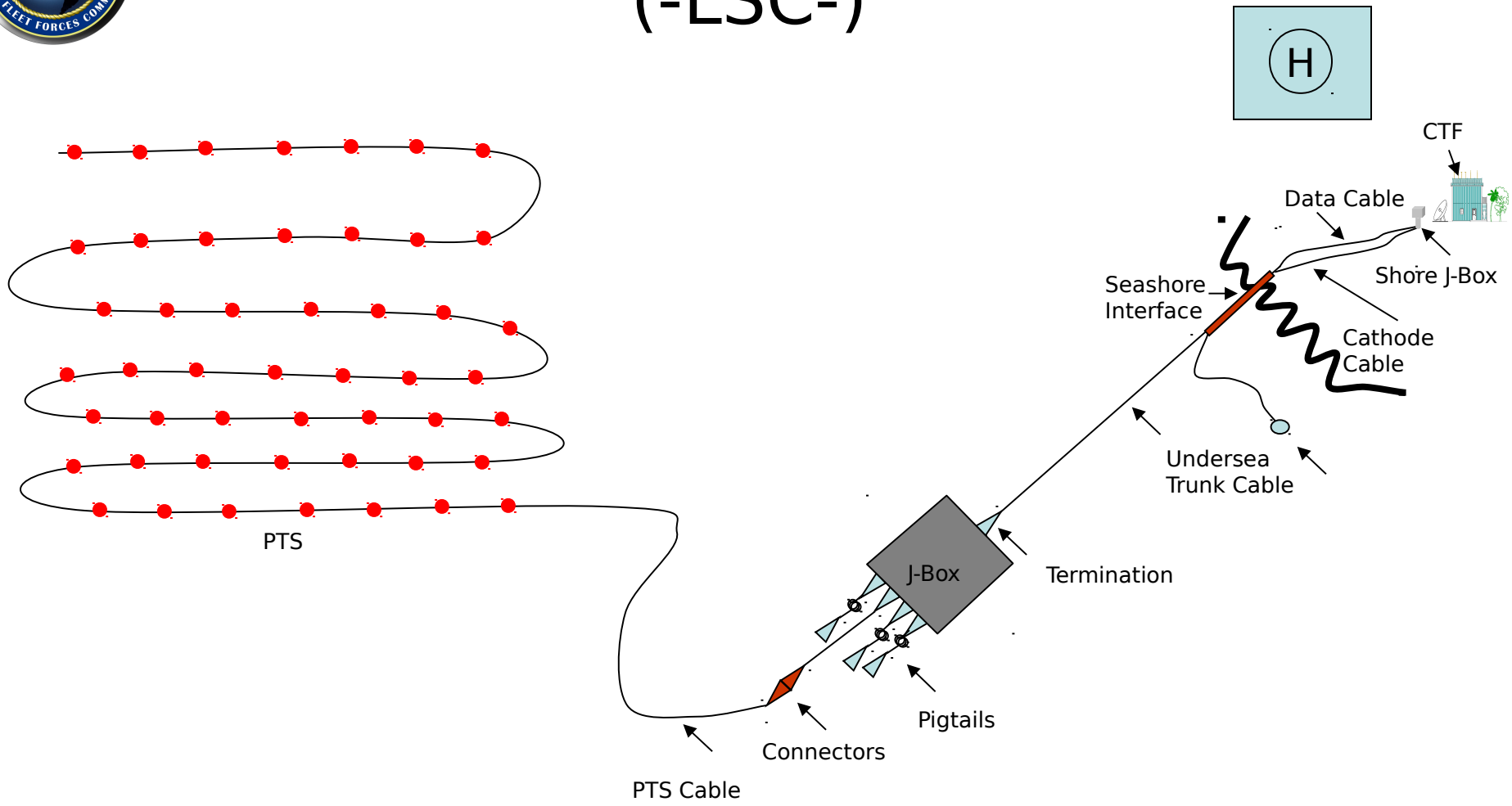
N

AMSWR (6 NMI)

2 NMI

Aerial View of Little Stirrup Cay

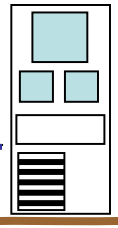
In Water/Onshore Approach (-LSC-)



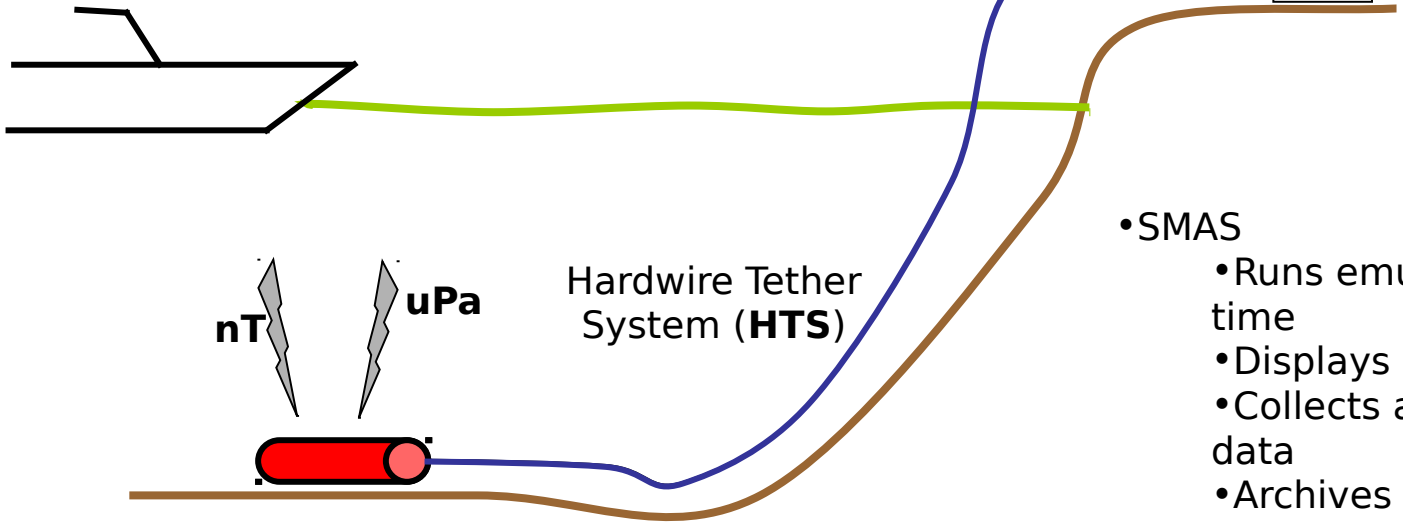
Advanced Mine Simulation System (AMISS)

- Platform signatures received at AMISS Deployed Body
- Signature data processed and filtered on-board ADB
- Data transferred to topside via HTS.
- SMAS receives data

Shore-based Monitoring and Analysis Station (**SMAS**)



Rack-Mounted
Portable
Complete Package
Near RT Emulation Executio
Signature Data Collection
Data Archiving
Communications
Data Displays
Post-Processing Functions

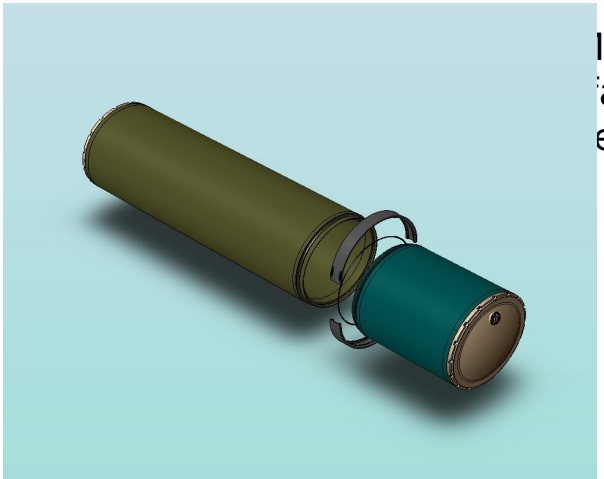


Hardwire Tether System (**HTS**)

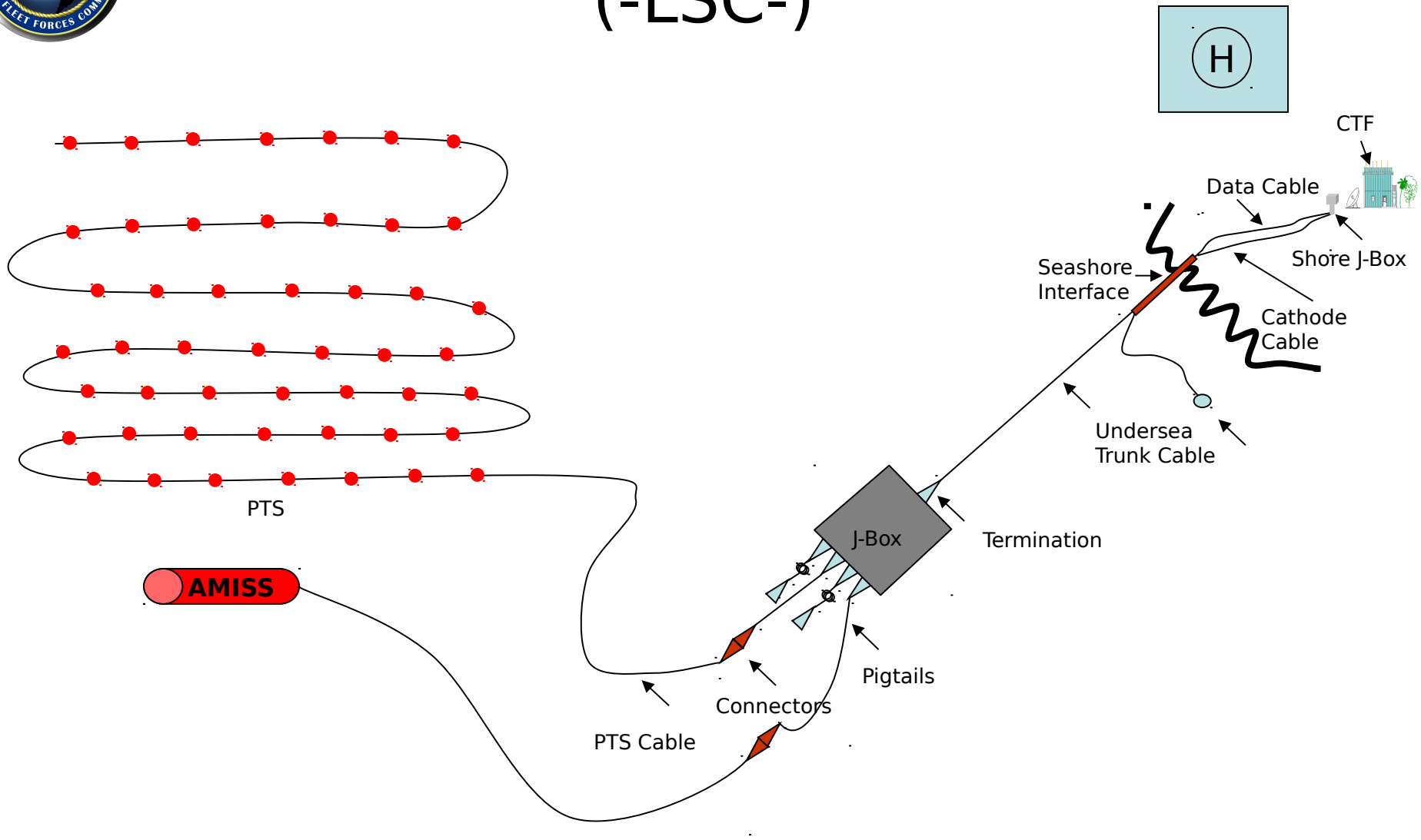
AMISS Deployed Body (**ADB**)

- SMAS
  - Runs emulations, near real time
  - Displays analysis data
  - Collects and stores signature data
  - Archives data to DVD/CD-ROM

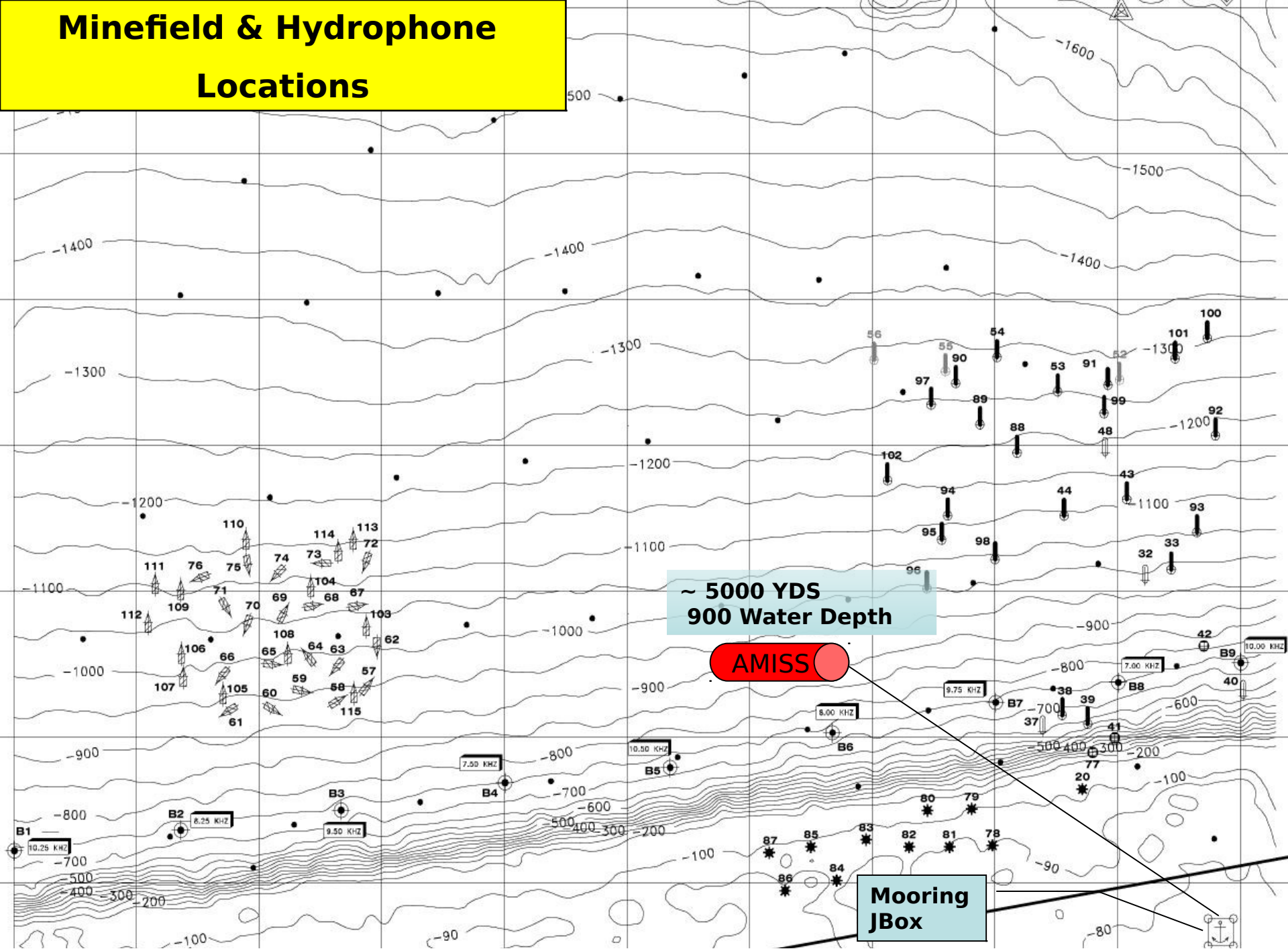
IAS may be located on-board
face support craft vice shore-
ed



In Water/Onshore Approach (-LSC-)



Minefield & Hydrophone Locations



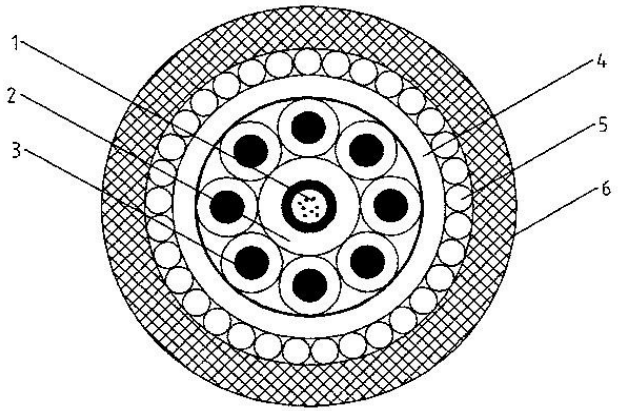
Onshore J-Box & Ocean Cable

NORDDEUTSCHE SEEKABELWERKE GMBH & Co KG

P.O. Box 14 64 — D-26944 Nordenham
Phone: +49-4731-821477 — Fax: +49-4731-821520

CROSS SECTION 116591	TITLE: Range Cable	Date: 25.11.2002

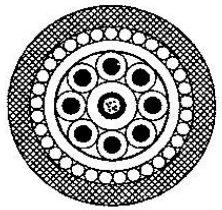
1. FO element (copper tube) with 8 fibres E9/125/250 µm
2. HDPE jacket, w approx. 2.3 mm
3. 8 cores 6 mm^2 with HDPE insulation, w = 1.3 mm
4. HDPE jacket, w approx. 2.1 mm
5. One layer of galv. steel wires d = 2.6 mm with bitumen filling
6. Two layers of PP yarns



Scale: 2 : 1

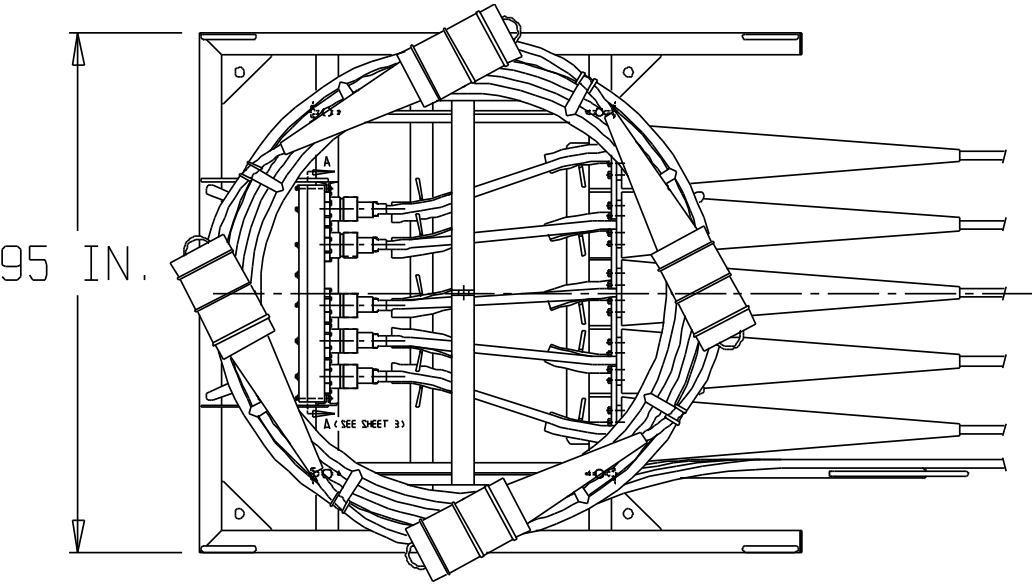
Mechanical characteristics:

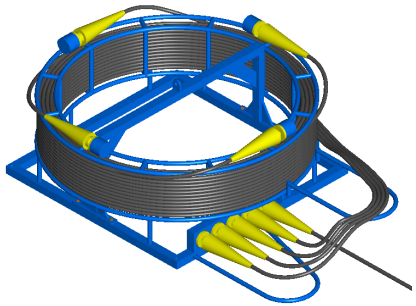
outer diameter:	approx.	39 mm
specific gravity:	approx.	2.7 kg/dm^3
weight in air:	approx.	2900 kg/km
weight in seawater:	approx.	1700 kg/km
hydrodynamic constant:	approx.	0.9 m/s
Cable breaking load (CBL):	approx.	250 kN
Dynamic tension (NTTS):	approx.	160 kN
Operational tension (NOTS):	approx.	140 kN
Static tension (NPTS):	approx.	50 kN
recommended bending radius:	approx.	800 mm

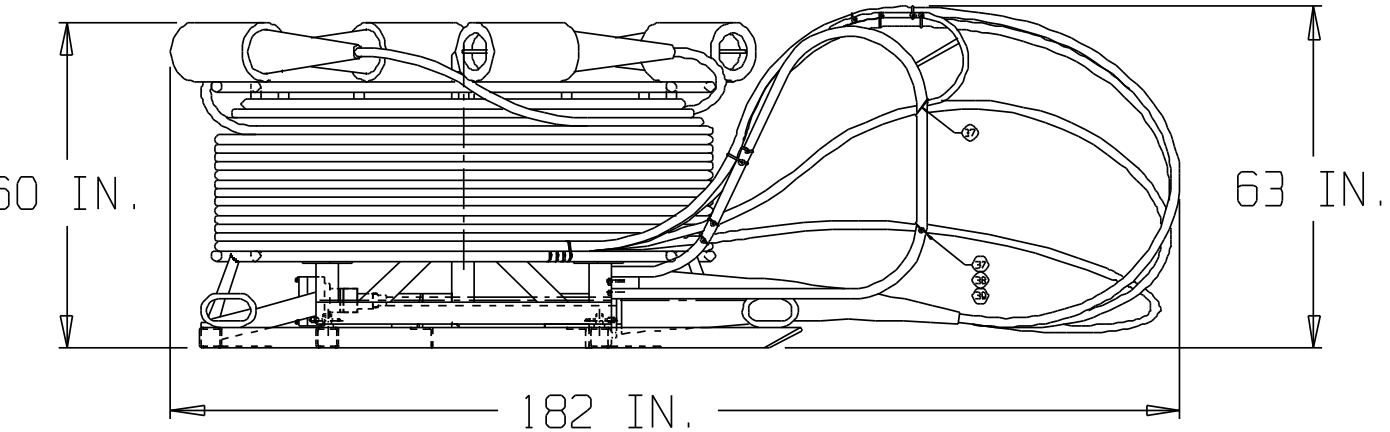


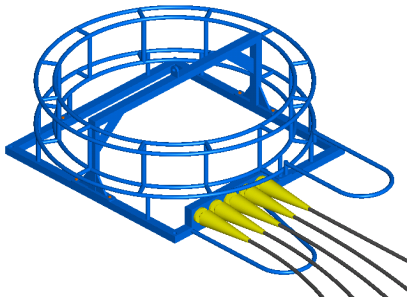
MODIFICATION RIGHTS RESERVED

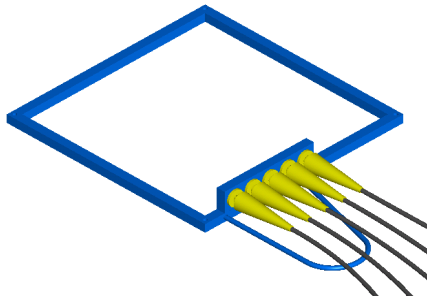
AMSWR Off-Shore J-BOX







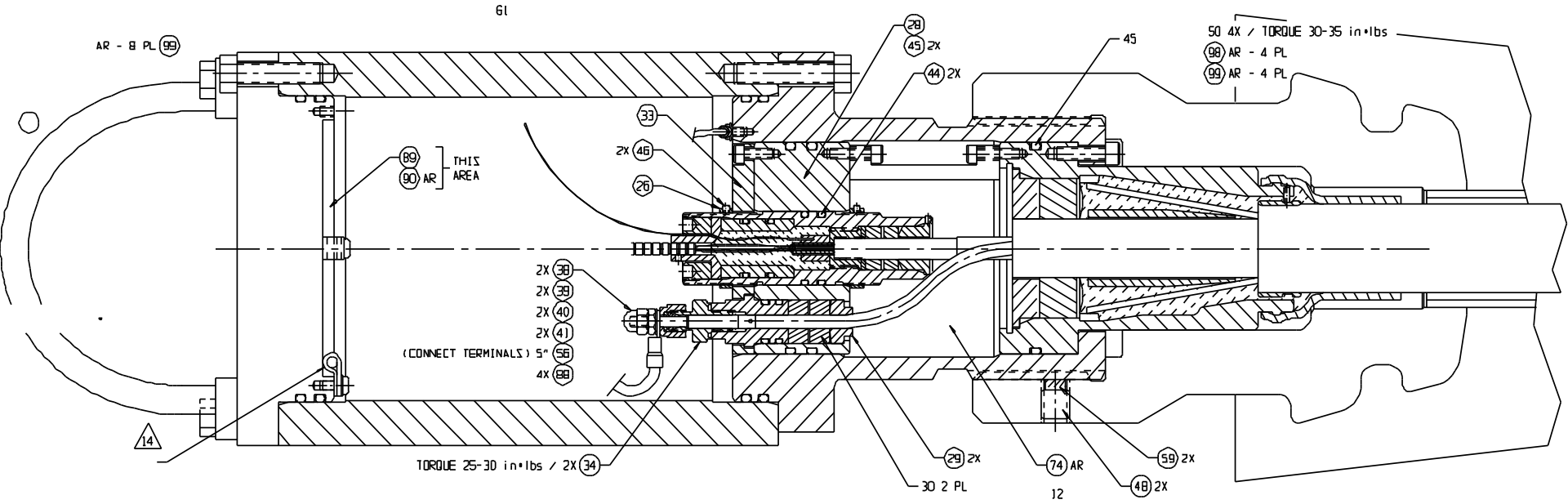




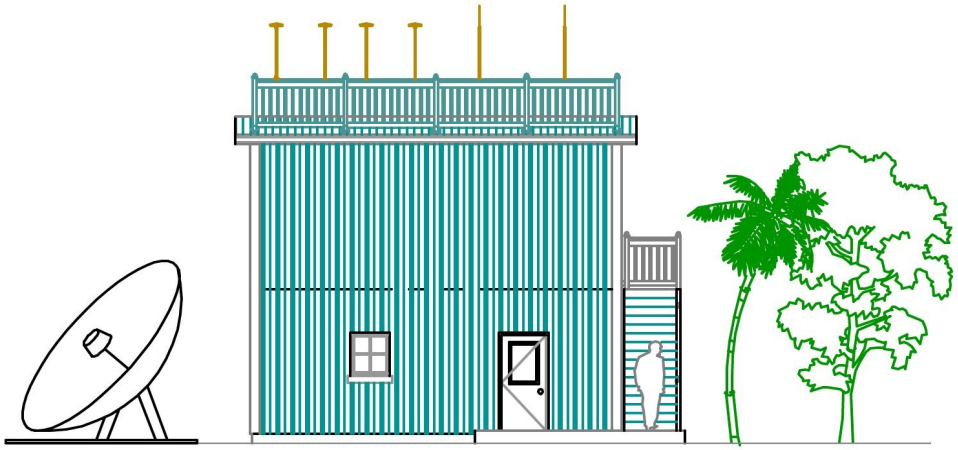
ASWRM OFF-SHORE J-BOX:

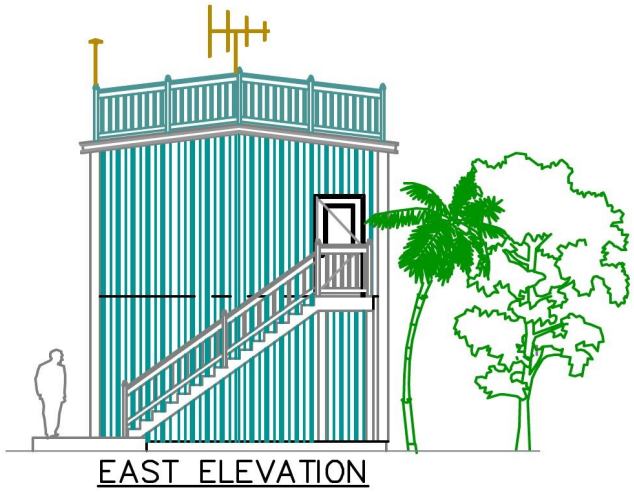
APPROX WEIGHT (IN-AIR)	6500 LBS.
APPROX WEIGHT (IN-WATER)	4300 LBS.

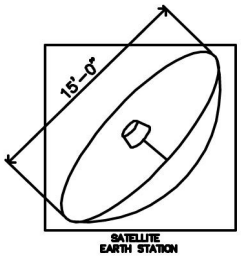
AMSWR Pigtail Termination Assembly

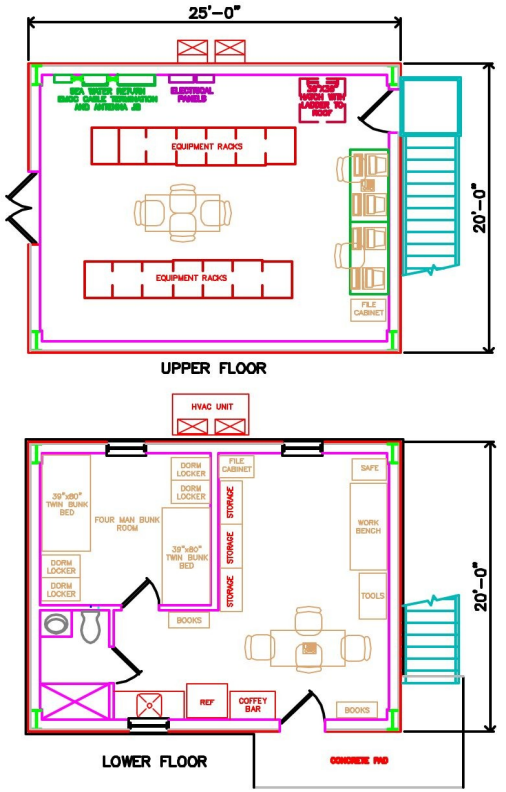


LSC Shore Facility



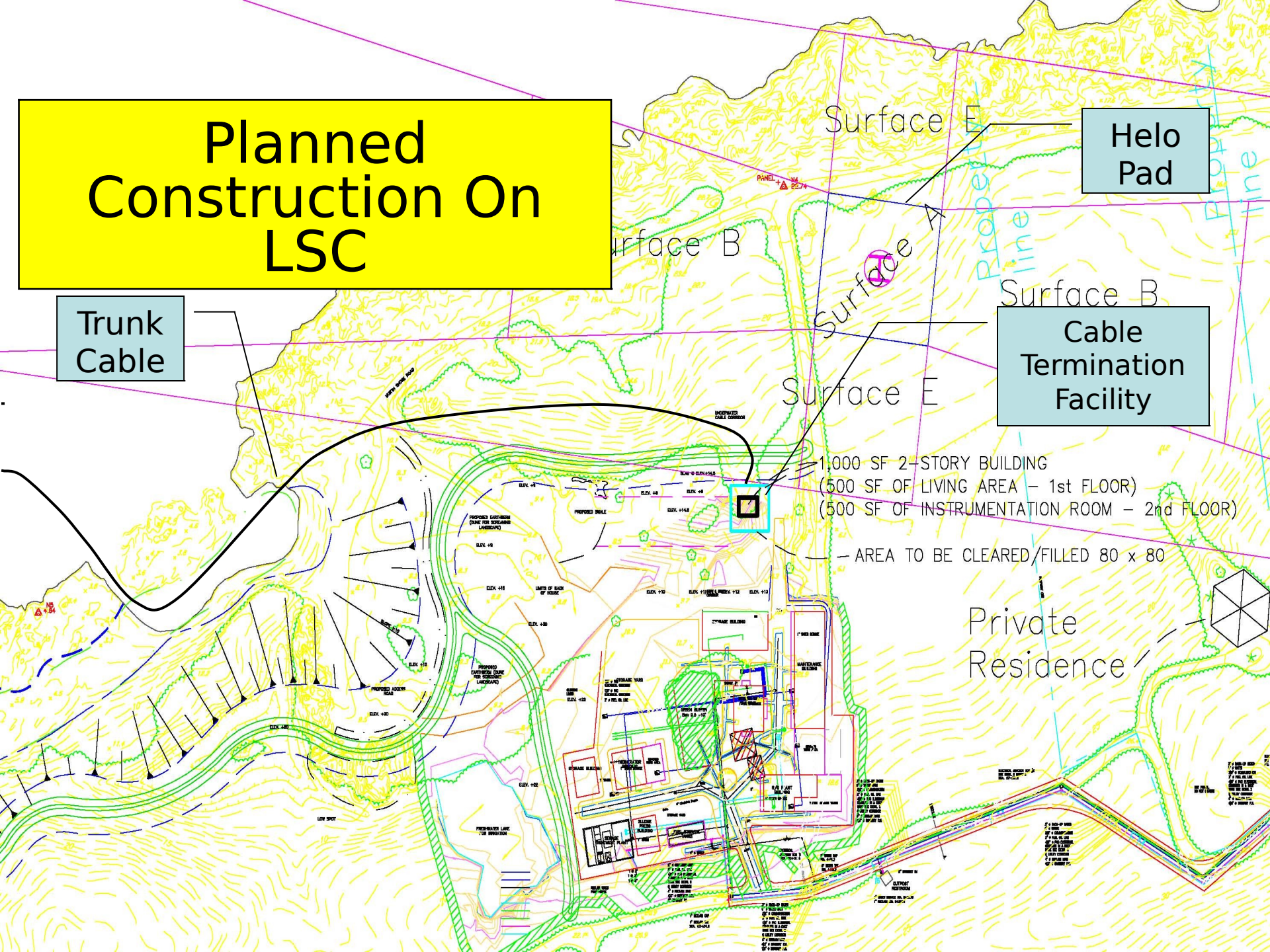






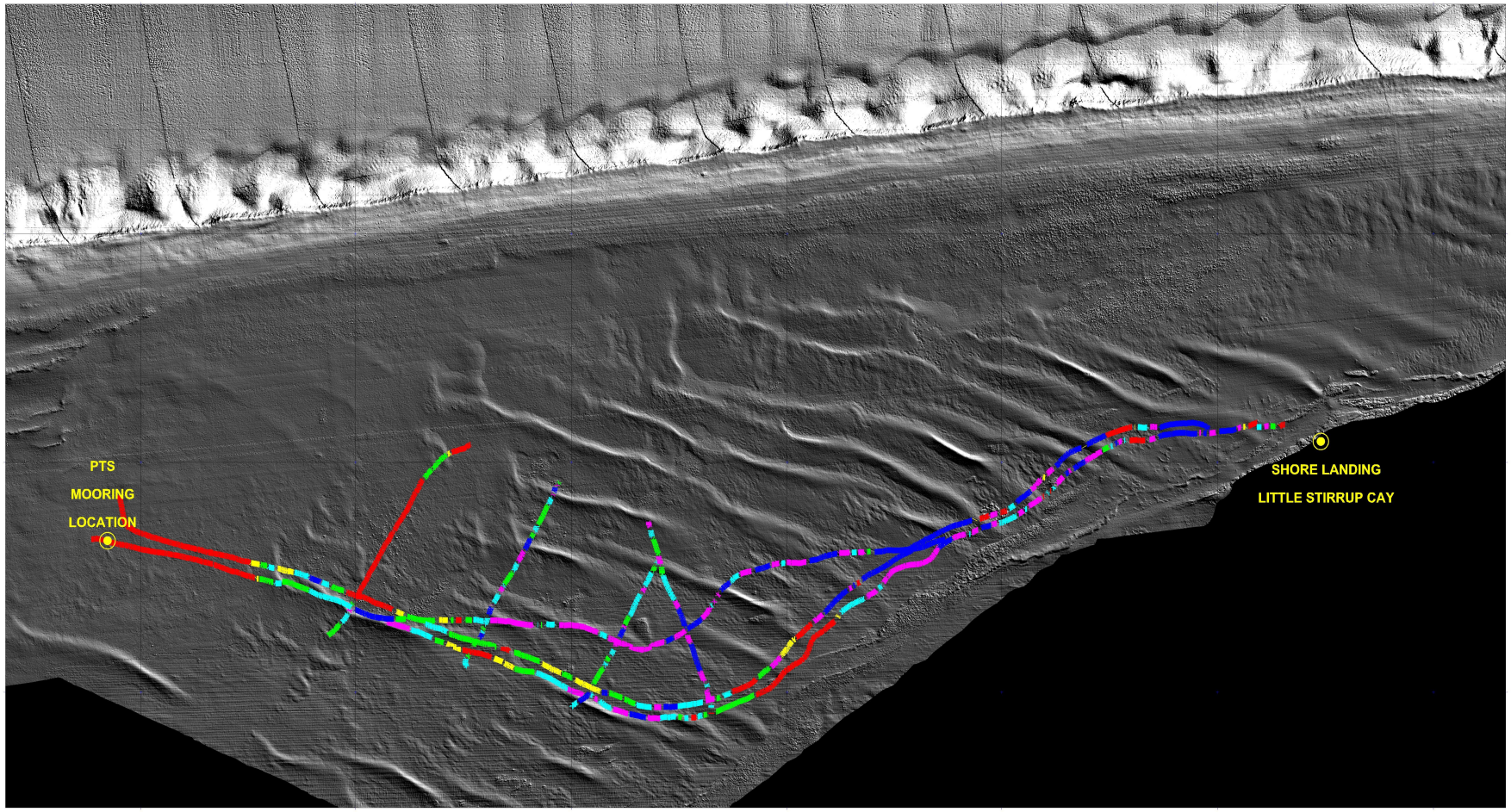
2-STORY BLDG. - PLAN
(1,000 sf)

FIGURE 5
ALTERNATIVE 2
HELICOPTER PAD WITH 2-STORY BUILDING


Planned Construction On LSC
Trunk Cable
Helo Pad
Cable Termination Facility
Surface E
Surface B
Surface A
Surface B
Surface E
1,000 SF 2-STORY BUILDING
(500 SF OF LIVING AREA - 1st FLOOR)
(500 SF OF INSTRUMENTATION ROOM - 2nd FLOOR)
AREA TO BE CLEARED/FILLED 80 x 80
Private Residence

AUTEC Shallow Water Range - Cable Installation Program

Sediment Thickness



Projection: Geographic Lat/Lon

Pixel Size: 0.095418 x 0.090059 Seconds

Datum: WGS-84

Ellipsoid: WGS 84

N
W
E
S

0 1 2 Miles

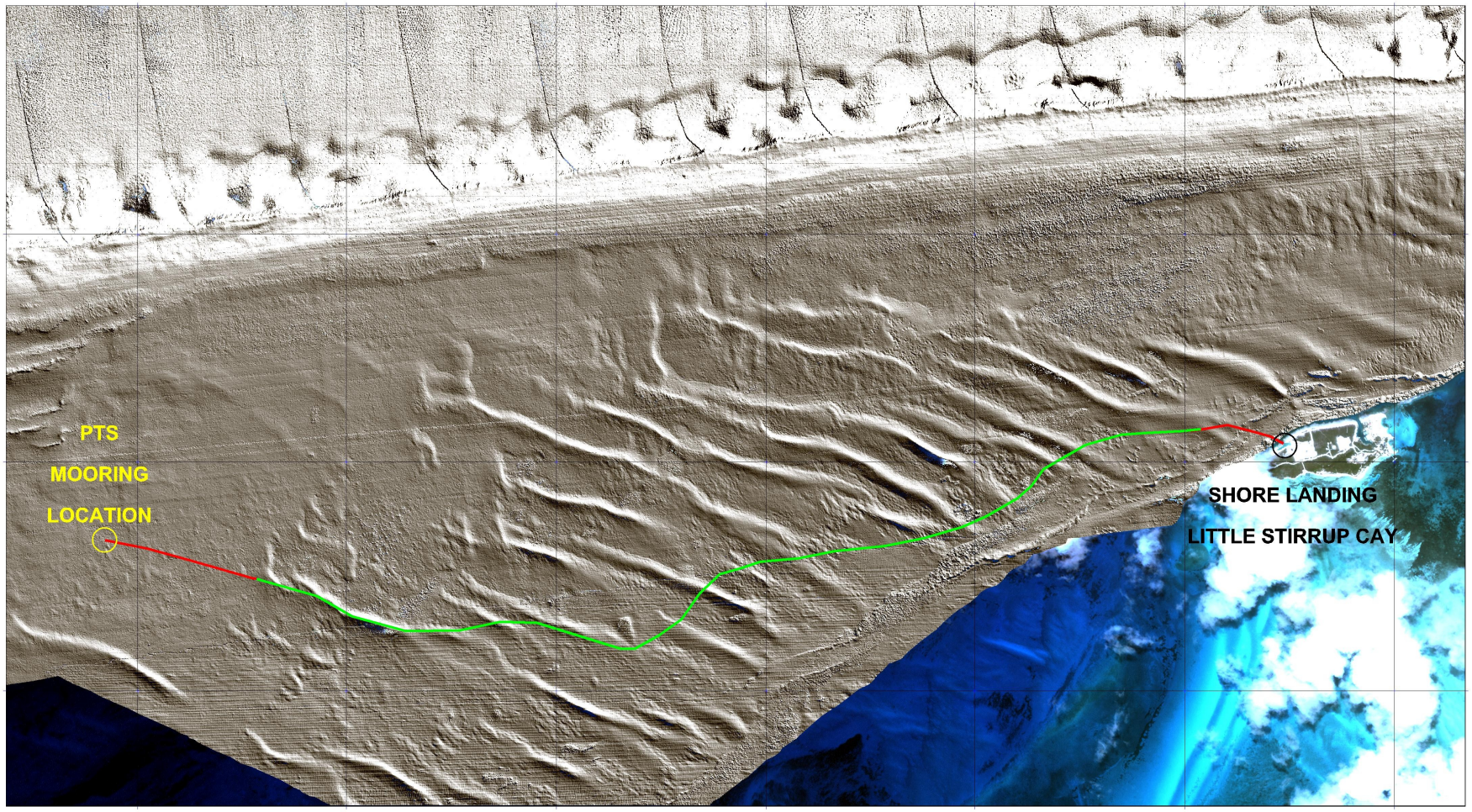
0 1 2 3 4 Km

Map Scale 1:50,000

- 0.0 - 0.5 meters
- 0.51 - 1.0 meters
- 1.01 - 2.0 meters
- 2.01 - 3.0 meters
- 3.01 - 4.0 meters
- 4.01 - 7.0 meters

AUTEC Shallow Water Range - Cable Installation Program

Cable Route



Projection: Geographic Lat/Lon

Pixel Size: 0.095418 x 0.090059 Seconds

Datum: WGS-84

Ellipsoid: WGS 84

N
W E
S

0 0.5 1 Miles

0 1 2 3 Km

Map Scale 1:50,000

Shallow Sediment / Rock

Deep Sediment

AMSWR Schedule Highlights

- SW Build II Debugged (1/04)
- Cable Install Contract (3/04)
- Cable & J-Box Installation (6-7/04)
- LSC Building Fabrication (5-11/04)
- Final System Integration & Test (12/04)
- IOC (1/05)

AUTEC Minefield & Shallow Water Range

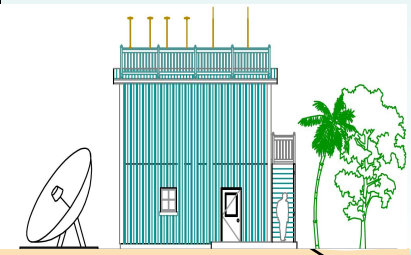
- Future Concepts -

Satellite

Data To
AUTEC Site 1

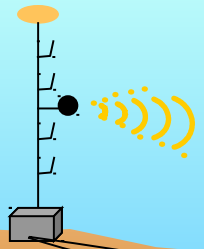
AUTEC Real-time
Display Tracking Center

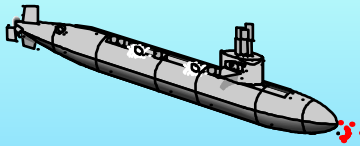
ASWRM Cable
Termination Site
Berry Island



Shallow Array
(100')
-Temp Sensors
-U/W Comms
-Other Sensors

Deep Array
(1200')
-U/W Winch
-CTD Sensor
-U/W Comms
-Omniphone
-Other Sensors





Smart Mine Array

Tethered
Shapes

BiDi
Nodes

Bottom Shapes

Hydrophones Array

J-Box